Critical Items List (CIL) Sheet

Critical Item: Filter (2 items) B/L: 801.07

Find Number: F7, F8 **Criticality Category:** 1

FMEA/CIL No: STS88-0232 System/Area: OMS/RCS / OPF

NASA PMN/ S70-1132/ OMS/ Part No: ME286-0068-0008 Name: RCS, QD/Filter Set

Mfg./ Wintec/ Drawing/ ESR 16477/-

Part No: 6267-520-08 **Sheet No:**

Function: Filters pressurant gases flowing into MMH side of OMS/RCS Pod

crossfeed interface flange during post-flight deservicing.

Critical Failure Mode/Failure Mode No: Pass contaminates/

FMN: STS88-0232.004

Failure Cause: Manufacturing defect, wear or corrosion.

Failure Effect: Releases contaminates into the pod-side OMS/RCS subsystem MMH crossfeed line. Subsequent fuel loading carries the contamination into the manifolded OMS & RCS propellant tanks. During orbital insertion OME firing, the following could occur:

- Common cause contamination passes through both 100 micron OMS filter screens (FL002), later resulting in two fuel bi-propellant valves to fail closed/ fail to open during deorbit burn (ref. Orbiter CIL 03-3-4001-02) in one or more of the following manners:
 - left OME LV007 and right OME LV007
 - left OME LV007 and right OME LV009
 - left OME LV009 and right OME LV007
 - left OME LV009 and right OME LV009
- Common cause contamination loads both OMS MMH filter screens (FL002), resulting in later termination of fuel flow to both engines (ref. Orbiter CIL 03-3-4002-1) during deorbit burn.

In either case, both OMS engines fail, resulting in the inability to deoribit and possible loss of life/vehicle.

Time to effect: days

ACCEPTANCE RATIONALE

Design:

Nonseparable, canister design

Materials: - Body: Stainless steel

- Element: welded, single layer, Dutch Weave, stainless

steel, wire mesh cloth

Upstream filtration: - S70-0868 panels, filters A97363/A96363 (HMF)

Contaminate capacity: 3.6 grams

Pressure (psig):

- operating: 250 - rated: 1500 - proof: 2250 - burst: 6000

- element collapse: 400 differential

This equipment is designed and used in accordance with SN-C-0005, Contamination Control Requirements.

These filters are only used with fluids that conform to SE-S-0073, STS Fluid Procurement and Use Control Specification.

Test: The ME286-0068 filter procurement specification requires the following tests:

- Each filter element is "bubble point" tested (prior to assembly to the body)
- Each filter is proof pressure tested for no less than three minutes
- Lot representative filters are filtration tested with contaminate dust
- Lot representative filters are vibration tested
- Lot representative filters are (filter element) collapse pressure tested with contaminate dust

Inspection:

 Early Program filter element inspections of dissected, actual-use filters showed no indications of corrosion, wear or material defect. Further, no actual-use filter so inspected contained a contaminate quantity approaching its rated capacity.

OMRSD File VI TBD.

Failure History:

• The PRACA database was queried and one failure was reported. The failure is attributed to the inability of the filter to pass the bubble point testing.

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• The GIDEP failure data interchange system was queried and no failure data was found on this component in the critical failure mode.

Operational Use:

- Correcting Action: None